UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,312	10/31/2003	Eric Bernier	71493-1181 /slb	9866

7380 7590 12/14/2006

SMART & BIGGAR
P.O. BOX 2999, STATION D
900-55 METCALFE STREET
OTTAWA, ON K1P5Y6
CANADA

EXAMINER	
AZEMAR, GUERSSY	
ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 12/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/697,312	BERNIER ET AL.	
	Examiner	Art Unit	
	Guerssy Azemar	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04/16/2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4, 6, 14-16, 18, 25-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishi et al. (20030185566).

(1) With respect to claims 1 and 14:

As shown in figure 15, Nishi et al. teaches a method of protecting any one of a plurality of optical signals of a multi-wavelength optical signal from failure of an optical component, the method comprising:

optically splitting the multi-wavelength optical signal to obtain a protection portion of the multi-wavelength optical signal comprising protection portions of each of the optical signals (the protection portions are going into 64 in figure 15).

detecting a failure in the optical component, which would affect a particular optical signal of the plurality of optical signals (page 8, paragraph 0115, when a failure is detected due to component failure).

redirecting around the optical component the protection portion of the optical signal (output of 64 in figure 15 goes to another input of the switch).

wavelength filtering the protection portion of the multi-wavelength optical signal to obtain the protection portion of the particular optical signal (64 and 75 in figure 15, Nishi uses both filter 71-n in figure 15).

(2) With respect to claim 2:

Nishi et al. teaches a method, wherein the optical component comprises a dedicated switching fabric (11 in figure 9), and the step of redirecting comprises inputting the protection portion of the multi-wavelength optical signal (#1 p goes through 41-1 and into a spare switch) through a spare switching fabric (12 in figure 9).

(3) With respect to claim 3:

Nishi et al. teaches a method, wherein the step of optically splitting the multi-wavelength optical signal (61 in figure 15) is further to obtain an in-service portion of the multi-wavelength optical signal (63 in figure 15, the in-service portion goes through the demultiplexer), the method further comprising the step of:

directing the in-service portion of the multi-wavelength optical signal toward the dedicated switching fabric for switching therethrough (13 in figure 15).

(4) With respect to claim 4:

Nishi et al. teaches a method, wherein the step of wavelength filtering comprises passing the protection portion of the multi-wavelength optical signal through a tunable optical filter (64 in figure 15), the method further comprising:

optically combining the protection portion of the particular optical signal after it has passed through the tunable optical filter with a second multi-wavelength optical signal from the dedicated switching fabric (76 in figure 15).

(5) With respect to claim 6:

Nishi et al. teaches a method, further comprising:

after the step of directing the in-service portion of the multi-wavelength optical signal toward the dedicated switching fabric (through 61 in figure 15), demultiplexing the in-service multi-wavelength optical signal into a plurality of in-service optical signals (63 in figure 15);

passing the plurality of in-service optical signals to the dedicated switching fabric for switching therethrough (13 in figure 15); and

before the step of optically combining the particular optical signal with the second multi-wavelength optical signal, multiplexing a second plurality of in-service optical signals emerging from the dedicated switching fabric into the second multi-wavelength optical signal (72 in figure 15).

(6) With respect to claim 15:

Nishi et al. teaches a protection arrangement, wherein optically splitting the multi-wavelength optical signal is further to obtain an in-service portion of the multi-wavelength optical signal (61 in figure 15 splits the signals and in-service portion goes to 62 and 63 in figure 15), wherein the redirecting means comprising a protection optical waveguide for inputting the protection portion of the multi-wavelength optical signal through a spare switching fabric (the protection waveguide connects the signal to 64 and 65, then the spare switch), and wherein the optical component comprises a dedicated switching fabric (13 in figure 15), the protection switching arrangement further comprising:

an ingress optical waveguide for directing the in-service multi-wavelength optical signal toward the dedicated switching fabric for switching therethrough (13 in figure 15).

(7) With respect to claim 16:

Nishi et al. teaches a protection switching arrangement further comprising:

an optical combiner (76 in figure 15) coupled to an output of the tunable optical filter for optically combining the protection portion of the particular optical signal after it has passed through the tunable optical filter with a second multi-wavelength optical signal from the dedicated switching fabric (the output of demultiplexer 72, combined with the output of 75 in figure 15).

(8) With respect to claim 18:

Nishi et al. teaches a protection switching arrangement, the protection switching arrangement further comprising:

a demultiplexer coupled to the ingress optical waveguide for demultiplexing the in-service portion of the multi-wavelength optical signal into a plurality of in-service optical signals (63 in figure 15);

a plurality of ingress in-service optical waveguides optically coupled to outputs of the demultiplexer for passing the plurality of in-service optical signals to the dedicated switching fabric for switching therethrough (the waveguide are connecting the outputs of the demultiplexer to the switch 13 in figure 15); and

a multiplexer (72 in figure 15) for multiplexing a second plurality of in-service optical signals emerging from the dedicated switching fabric into the second multi-

wavelength optical signal (the inputs of 72 in figure 15) before it is combined with the protection portion of the particular optical signal (76 in figure 15).

(9) With respect to claims 25 and 27:

Nishi et al. teaches (in figure 15) a method of protecting an optical communication system from an invalid optical signal along a protection pathway, the method comprising: wavelength-filtering (71-n in figure 15) access to the optical communication system from the protection pathway such that no invalid optical signals (failed signal) are transmitted to the system from the protection pathway (through the combiner 76 in figure 15).

(10) With respect to claim 26:

Nishi et al. teaches a method wherein the step of wavelength filtering comprises: interposing a tunable optical filter between the system and the protection pathway (71-n in figure 15); and controllably tuning the filter such that no invalid optical signal passes therethrough (the filter tunes to whichever wavelength is not valid or not output an amplifies it if need be).

(11) With respect to claim 28:

Nishi et al. teaches an ingress trunk line card (60 – 1 in figure 15) for use in protecting any one of a plurality of optical signals of a multi-wavelength optical signal ($\lambda 1$ - λn in figure 15) from a detected failure of a dedicated switching fabric (13 in figure 15), the ingress trunk line card comprising:

an optical splitter (61 in figure 15) for optically splitting the multi-wavelength optical signal to obtain a protection portion of the multi-wavelength optical signal

comprising protection portions of each of the optical signals (at the input of 64 in figure 15); and

redirecting means coupled to the optical splitter for redirecting around the dedicated switching fabric the protection portion of the multi-wavelength optical signal (the protection waveguide connected to 61 in figure 15).

(12) With respect to claim 29:

Nishi et al. teaches an egress trunk line card (70-1 in figure 15) for use in protecting any one of a plurality of optical signals of a multi-wavelength optical signal from a detected failure of a dedicated switching fabric, the egress trunk line card comprising:

redirecting means for redirecting around the dedicated switching fabric a protection portion of the multi-wavelength optical signal comprising protection portions of each of the optical signal (the protection waveguide is used the redirect the wavelength signal at splitter 61 in figure 15);

a tunable optical filter coupled to the redirecting means for wavelength filtering the protection portion of the multi-wavelength optical signal to obtain the protection portion of a particular optical signal which would have been affected by the failure (71-n in figure 15); and

an optical combiner coupled to an output of the tunable optical filter for optically combining the protection portion of the particular optical signal after it has passed through the tunable optical filter with a second multi-wavelength optical signal from the dedicated switching fabric (76 in figure 15).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 8-11, 21, 22, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (20030185566).

(1) With respect to claims 8 and 20:

As shown in figure 15, Nishi et al. teaches a method of protecting any one of a plurality of optical signals of a multi-wavelength optical signal from failure of an optical component, the method comprising:

optically splitting each of the separate optical signals to obtain a corresponding protection portion of each optical signal (61 in figure 15).

detecting a failure in the optical component, which would affect a particular optical signal of the plurality of optical signals (page 8, paragraph 0115, when a failure is detected due to component failure).

redirecting around the optical component the protection portion of the optical signal (output of 64 in figure 15 goes to another input of the switch).

wavelength filtering the protection portion of the signal to obtain the protection portion of that particular optical signal (64 and 75 in figure 15, Nishi uses both filter 74 and 75 to filter only a single wavelength at the input or at the output).

However, Nishi et al. does not teach multiplexing the plurality of protection portions of each optical signal into a multi-wavelength optical signal.

demultiplexing the protection portion of the particular optical signal to further redirect it.

Nishi et al. does not disclose the step of multiplexing and demultiplexing the multi-wavelength optical signal because the signals are already multiplexed onto one fiber. In doing so, the reference removes the need for multiplexing and demultiplexing the multi-wavelength optical signal and does not change the fact that the reference does realize exactly the applicant's claimed invention.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to split a protection portion of each signal in the network taught by Nishi et al. in order to provide redundancy for one or all the wavelengths transmitted by the system.

(2) With respect to claim 9:

Nishi et al. teaches a method, wherein the optical component comprises a dedicated switching fabric (11 in figure 9), and the step of redirecting comprises inputting the protection portion of the multi-wavelength optical signal (#1 p goes through 41-1 and into a spare switch) through a spare switching fabric (12 in figure 9).

(3) With respect to claim 10:

Nishi et al. teaches a method, wherein the step of optically splitting the multi-wavelength optical signal (61 in figure 15) is further to obtain an in-service portion of

the multi-wavelength optical signal (63 in figure 15, the in-service portion goes through the demultiplexer), the method further comprising the step of:

directing the in-service portion of the multi-wavelength optical signal toward the dedicated switching fabric for switching therethrough (13 in figure 15).

(4) With respect to claim 11:

Nishi et al. teaches a method, wherein the step of wavelength filtering comprises passing the protection portion of the multi-wavelength optical signal through a tunable optical filter (64 in figure 15), the method further comprising:

optically combining the protection portion of the particular optical signal after it has passed through the tunable optical filter with a second multi-wavelength optical signal from the dedicated switching fabric (76 in figure 15).

(5) With respect to claim 21:

Nishi et al. teaches a protection arrangement, wherein optically splitting the multi-wavelength optical signal is further to obtain an in-service portion of the multi-wavelength optical signal (61 in figure 15 splits the signals and in-service portion goes to 62 and 63 in figure 15), wherein the redirecting means comprising a protection optical waveguide for inputting the protection portion of the multi-wavelength optical signal through a spare switching fabric (the protection waveguide connects the signal to 64 and 65, then the spare switch), and wherein the optical component comprises a dedicated switching fabric (13 in figure 15), the protection switching arrangement further comprising:

an ingress optical waveguide for directing the in-service multi-wavelength optical signal toward the dedicated switching fabric for switching therethrough (13 in figure 15).

(6) With respect to claim 22:

Nishi et al. teaches a protection switching arrangement further comprising:

an optical combiner (76 in figure 15) coupled to an output of the tunable optical filter for optically combining the protection portion of the particular optical signal after it has passed through the tunable optical filter with a second multi-wavelength optical signal from the dedicated switching fabric (the output of demultiplexer 72, combined with the output of 75 in figure 15).

(7) With respect to claim 30:

Nishi et al. teaches An ingress tributary card for protecting any one of a plurality of separate optical signals from a detected failure of a dedicated switching fabric (60-1 in figure 15), the ingress tributary card comprising:

redirecting means coupled to an output of the multiplexer for redirecting around the dedicated switching fabric the multi-wavelength optical signal (output of 64 in figure 15 goes to another input of the switch).

However, Nishi et al. does not teach a plurality of optical splitters for optically splitting an optical signal to obtain a corresponding protection portion of the optical signal.

a multiplexer coupled to first outputs of the splitters for multiplexing the plurality of protection portions of each optical signal into a multi-wavelength optical signal.

Nishi et al. only discloses one optical splitter to obtain the protection portions of the multi-wavelength optical signal because multi-wavelength taught by Nishi et al. were multiplexed at a different stage of the invention, which removes the need for multiple splitters and a multiplexer at the output of the splitters. They only serve to do what the reference would have done had it taught multiple wavelengths on different fibers.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to teach one splitter as taught by Nishi et al. in order to remove the need for extra hardware at the protection stage.

(8) With respect to claim 31:

Nishi et al. teaches an egress tributary card for protecting any one of a plurality of separate optical signals from a detected failure of a dedicated switching fabric (70-1 in figure 15), the egress tributary card comprising:

redirecting means for redirecting around the dedicated switching fabric a multi-wavelength optical signal comprising protection portions of each of the optical signals (the input of 71-n in figure 15);

a tunable optical filter coupled to the redirecting means for wavelength filtering the multi-wavelength optical signal to obtain a protection portion of a particular optical signal, which would have been affected by the failure (71-n in figure 15);

However, Nishi et al. does not teach a demultiplexer coupled to an output of the tunable optical filter for demultiplexing the protection portion of the particular optical signal to further redirect it; and

a plurality of optical combiners coupled respectively to a plurality of outputs of the demultiplexer for optically combining the protection portion of the particular optical signal after it has been demultiplexed to redirect it along an optical pathway the particular optical signal would have been directed along had the optical component not failed (the reference teaches a combiner because the signals are previously multiplexed so that a plurality of combiners are unnecessary).

Nishi et al. does not disclose the demultiplexer and the plurality of combiners because the reference does not need the demultiplexer and the combiners. They are needed in the claimed invention because the applicant is using multiple fibers to transport the different wavelengths. However, the reference uses a single fibers, hence uses only a combiner, which removes the need for the demultiplexer and the combiners.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the combiner as taught by Nishi et al. because the system becomes cheaper without the extra hardware.

1. Claims 5, 12, 17, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (20030185566) in view of Blumenthal et al. (20020044322).

Nishi et al. teaches the protection portion of a particular optical signal (input 0f 64 in figure 15) and the wavelength filter (64 in figure 15).

However, Nishi et al. does not teach tapping the protection portion of the particular signal to obtain an indication of an optical power the protection portion of the particular optical signal; and

Tuning the tunable optical filter with use of the indication of the optical power.

Blumenthal et al. teaches a power tap performance monitor with use with a tunable filter (see part (b) of figure 2, page 4, paragraph 0060 supports the use of the tunable filter with the power tap).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use calculate the power level of the particular signal as taught by Blumenthal et al. in the signal system of Nishi et al. in order to monitor wavelength dependent gain or loss variations.

2. Claims 7, 13, 19, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (20030185566) in view of Caroli et al. (20030007722).

(1) With respect to claims 7, 13, 19, 24:

Nishi et al. teaches a method wherein the failure of the optical component is associated with a stray optical signal emerging from an output of the optical component the particular optical signal would have emerged from had the optical component not failed (page 8, paragraph 0118).

However, Nishi et al. does not teach optically blocking the stray signal emerging from the output of the optical component.

Caroli et al. teaches a method of blocking stray signals (225 in figure 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the channel blocker taught by Caroli et al. in the multi-wavelength system taught by Nishi et al. because it would rid the system of the bad signal output of the switch.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guerssy Azemar whose telephone number is (571) 270-1076. The examiner can normally be reached on Mon-Fri (every other Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Guerssy Azemar

12/08/2006

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER